

Applicants: Terry et al.
Application No.: 10/616,331

Amendments to Drawings:

The attached sheet of drawing includes changes to Fig. 1 and replaces the original sheet including Fig.1. In the drawing amendments, Fig. 1 is labeled as "Prior Art."

REMARKS/ARGUMENTS

After the foregoing Amendment, Claims 1-27 are currently pending in this application. Claims 1-5, 12, 15, 16, 23, 24, 26 and 27 have been amended to cure informalities and lack of antecedent basis and to more distinctly claim subject matter which the Applicants regard as the invention. In the drawings, Figure 1 has been amended to include a label "prior art." Applicants submit that no new matter has been introduced into the application by these amendments.

Objections to Declaration

The Examiner indicated that the declaration is defective. A new declaration is submitted herewith.

Objections to the Drawings

The Examiner objected to the drawings because Figure 1 is not labeled as prior art. A replacement sheet including Figure 1, which has been revised to include a label "prior art" is submitted herewith. The withdrawal of the objection to the drawings is respectfully requested.

Claim Objections

The Examiner objected to claims 3-5 because of informalities. Claims 3-5 have been amended to cure the informalities. The withdrawal of the objection to the claims 3-5 is respectfully requested.

Claim Rejections - 35 USC §112

Claims 4, 15, 16 and 26 have been rejected under 35 U.S.C. §112, second paragraph for lack of antecedent basis. Claims 4, 15, 16 and 26 have been amended to cure the lack of antecedent basis. The withdrawal of the rejection to claims 4, 15, 16 and 26 is respectfully requested.

Claim Rejections - 35 USC §103(a)

Claims 1-27 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2003/0016698 by Chang et al. (hereinafter "Chang") in view of U.S. Patent No. 6,901,063 to Vayanos et al. (hereinafter "Vayanos").

Claim 1 of the present invention recites that an RNC sends a MAC layer reset notification to a UE, and that a control unit in the UE receives the MAC layer reset notification and flushes a reordering buffer upon receipt of the MAC layer

reset notification and generates a status report of the received PDUs and sends the status report to the RNC.

The Examiner asserts that Chang discloses a control unit for receiving said notification and a transmission means for transmitting a status report. The Applicants respectfully disagree.

In accordance with claim 1 of the present invention, a status means of the UE, after flushing the reordering buffer by a control unit, determines status of received PDUs and generates a status report of the received PDUs to feed back to the RNC. Chang fails to disclose generation of a status report of the received PDUs. The RLC reset ACK PDU sent from the receiver RLC to the sender RLC in Figure 18 of Chang, which is relied upon by the Examiner, is not a status report of the received PDUs, but merely an acknowledgement of MAC layer reset in the receiver.

As the Examiner indicates that Chang fails to disclose flushing the reordering buffer and determining the status of received PDUs to generate a status report. However, the Examiner asserts that Vayanos discloses flushing a reordering buffer and a status means for determining the status of received PDUs and generating a status report. The Applicants respectfully disagree.

Vayanos discloses a method for avoiding stalling the delivery of received packets to a higher layer with H-ARQ mechanism. In accordance with Vayanos, when a missing packet is identified, a set of candidate H-ARQ channels on which

the missing packet may be sent is identified, and activities on the candidate H-ARQ channels are monitored to determine whether the missing packet is successfully received or lost by successively eliminating H-ARQ channels that may be used to send the missing packet. The candidate H-ARQ channels are eliminated from the candidate set if: i) a packet is recovered from the H-ARQ channel; ii) the H-ARQ channel is active and a new data indicator is detected; iii) an inactivity time for the H-ARQ channel expires; or iv) a flushing indication is received for the H-ARQ channel. When the candidate set is empty, then the missing packet is assumed to be lost and all received packets stalled because of the missing packet are delivered to higher layers. (See abstract, column 14 lines 39-49 and column 16 lines 6-35).

Vayanos fails to disclose that the reordering buffer is flushed upon receipt of the MAC layer reset notification. In Vayanos, the reordering buffer is flushed after each of the candidate H-ARQ channel is removed from the candidate set upon occurrence of one of the four conditions described above and when there are no candidate H-ARQ channels left in the candidate set. Vayanos discloses as follows:

FIG.7A illustrates a case where the control channel is received and the New Data indicator is the control message is relied on to flush data from the re-ordering queue to higher layers. (See column 16 lines 64-67).

FIG. 7B illustrates a case where the control channel is received and the inactivity timer (TMI) is relied on to flush data from the re-ordering queue to higher layers. (See column 17 lines 51-53).

FIG.7C illustrates a case where the control channel is received and a flushing indication sent on the control channel is relied on to flush data from the re-ordering queue to higher layers. (See column 17 lines 62-65).

FIG 7D illustrates a case where the control channel is not received and a DTX to NAC error is received by the transmitter. FIG. 7D also shows a situation where the used of the delay timer allows for the correct determination of the candidate set for a missing packet, which would have been lost otherwise. (See column 18 lines 8-13).

In Vayanos, each candidate H-ARQ channel is eliminated based on the new data indicator, the inactivity timer, the flushing indication or the delay timer and when the candidate set is empty the reordering buffer is flushed to the higher layers.

The new data indicator indicates that the data transmitted via the H-ARQ channel is not a retransmission, but a transmission of new data so that the receiver may eliminate the H-ARQ channel from the candidate set because there will be no further retransmission of the missing data via that H-ARQ channel. The inactivity timer or the delay timer is used to determine that the missing packet will no longer be transmitted upon expiration of the timers.

The flushing indication is an alternative of the new data indicator. When the transmitter transmits a new data, instead of retransmitting the missing packet, via the H-ARQ channel, the transmitter sends a flushing indication via a separate control channel to indicate that the transmission is not a retransmission, but transmission of new data so that the receiver knows that there will be no further

retransmission of the missing packet via that H-ARQ channel. Therefore, the scheme of sending a new data indicator or a flushing indication or using an inactivity timer or a delay timer to monitor whether the missing packet is received or lost is clearly different from the scheme of flushing the reordering buffer based on a MAC layer reset notification.

In addition, Vayanos fails to disclose that the UE, after flushing the reordering buffer, determines status of received PDUs and generates a status report of the received PDUs to feed back to the RNC for retransmission of missing PDUs. Vayanos is silent about sending feedback of the status report of received PDUs to the RNC. The portion in Vayanos relied upon by the Examiner discloses an exemplary procedure of establishing a candidate H-ARQ channels and steps of eliminating H-ARQ channels from the candidate set as the H-ARQ channel is identified as not a candidate H-ARQ channel for the missing packet (i.e., occurrence of one of the four conditions above). In Chang, the receiver sends individual feedback, (i.e., ACK or NAK), to the transmitter for H-ARQ operation. However, the individual ACK/NAK feedback is not a status report of the received PDUs. Moreover, the ACK/NAK feedback is not generated and transmitted upon receipt of the MAC layer reset notification, but generated and transmitted each time the corresponding packet is received.

Both Chang and Vayanos fail to disclose that the UE flushes reordering buffer upon receipt of the MAC layer reset notification to a higher layer, and that the UE determines status of received PDUs and transmits a status report to the RNC upon receipt of the MAC layer reset notification. Therefore, claim 1 and its dependent claims are clearly distinguishable from Chang and Vayanos.

With respect to claims 12 and 23, claims 12 and 23 also recite flushing of a reordering buffer upon receipt of the MAC layer reset notification, and determination of the status of received PDUs and transmission of the status report to the RNC upon receipt of the MAC layer reset notification. Therefore, claims 12 and 23 and their dependent claims are also clearly distinguishable from Chang and Vayanos for the same reason stated above.

Conclusion

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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